EPA Responds to HOVENSA Refinery Release

Fact Sheet February 2011

TIMELINE:

DECEMBER 9, 2010:

- HOVENSA refinery releases vaporized and aerosolized material from Delayed Coker Unit.
- Material released – mixture of oil-related chemicals and hydrogen sulfide
- Neighborhoods affected – Estate Blessing, Clifton Hill, Profit Ridge and Freidensborg
- Duration of release – eight minutes

DECEMBER 10, 2010 – PRESENT:

- U.S. EPA responds and immediately initiates investigation and oversight activities.
- EPA conducts inspections of impacted areas including oversight of cistern sampling and reviewing of air monitoring results.

OUR GOAL IS TO KEEP YOU INFORMED:

EPA encourages public participation. If you have questions regarding the environmental aspects of this activity or would like additional information, please contact:

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BACKGROUND

On December 9, 2010, the HOVENSA refinery experienced a release of vaporized and aerosolized material from their Delayed Coker Unit that affected the Estate Blessing, Clifton Hill, Profit Ridge and Freidensborg neighborhoods. The release lasted approximately eight minutes. The materials released contained a mixture of oil-related chemicals and hydrogen sulfide. The fallout from the release impacted cars, rooftops, two public schools and other structural surfaces in the affected areas.

U.S. Environmental Protection Agency representatives responded to St. Croix on December 10, 2010, and immediately initiated investigation and oversight activities. EPA conducted inspections of the impacted areas, monitored HOVENSA activities, reviewed HOVENSA air monitoring results, and used computer air modeling to estimate the amount of hydrogen sulfide (H_2S) in air that reached the affected neighborhoods. Based on this investigation, H_2S levels within the affected communities were expected to be below the Emergency Planning Guide action levels of 0.1 parts per million (ppm).

EXPECTED HEALTH EFFECTS

Some individuals exposed to the airborne chemical plume may have experienced symptoms such as upper respiratory irritation, skin or eye irritation, nausea, dizziness or headache. However, there should be no long lasting health effects. Health effects from exposure to cistern water are not expected since "fingerprint" sample results show that chemicals from the HOVENSA DCU Coker release did not enter the cisterns.

EPA continues to work with our public health partners, ATSDR and DOH, to evaluate health concerns.

CHEMICAL FINGERPRINT ANALYSES

A product sample was collected from the HOVENSA DCU for "fingerprint analysis." The results from this sample were used much like a human fingerprint is used to identify a person. This sample provided a chemical fingerprint that was used to look for the released material in the cistern samples. If this chemical fingerprint were found during the analysis of the water samples, it would identify the presence of HOVENSA-released DCU material in the cisterns.

SPECIFIC CHEMICAL ANALYSES

In addition to the fingerprint analysis, all cistern samples were analyzed for specific chemicals that could potentially be in the HOVENSA coker residues and possibly cause a health concern. Specific chemical analyses included Total Petroleum Hydrocarbons (TPH) and Poly-Aromatic Hydrocarbons (PAHs).

CISTERN ANALYTICAL RESULTS

EPA originally expected that cisterns were not impacted in the effected neighborhoods for the following reasons:

- No rain fell for over 24 hours after the release, allowing time for lighter vapors to evaporate in the sun;
- Cistern downspouts were disconnected before the area received heavy rains;
- Chemicals from the HOVENSA coker unit do not easily dissolve in water, making it difficult for rain to carry them into the cisterns.

Analytical results confirmed our original expectations. All fingerprint analyses from cistern water were negative; indicating that chemicals from the DCU release did not enter cisterns in levels we can detect. In addition, Total Petroleum Hydrocarbons were not detected in any cistern samples. All EPA sample results for Poly Aromatic Hydrocarbons were also negative. In some cisterns samples, HOVENSA results showed parts per trillion levels of individual hydrocarbons and PAHs that are not associated with the material released from the Delayed Coker Unit. These low level chemicals were found in amounts that are below any health concern and can be from a variety of common air pollution sources including car exhaust. Additionally, seven samples were collected from cisterns that were not disconnected. These samples also showed no sign of chemicals from the HOVENSA coker release, confirming that the chemicals were not easily carried into cisterns by the little rain that was experienced since the release.

EPA OVERSIGHT AND SAMPLING ACTIVITIES

EPA used a technical contractor and members of the United States Coast Guard Atlantic Strike Team (USCG AST) to assist in its investigation and oversight activities. EPA took the following actions:

- Monitored HOVENSA assessment teams to ensure the accuracy of rooftop assessments;
- Made improvements to the HOVENSA cistern sampling plan to ensure the appropriate tests were conducted and results would accurately represent all cisterns in the affected area;
- Ensured the proper disconnection of downspouts to prevent rainwater entry into cisterns;
- Ensured the proper collection of cistern water samples;
- Collected 24 split cistern samples (over 50%) with HOVENSA to confirm the accuracy of the HOVENSA sample results (well in excess of the normal amount needed for confirmation);
- Conducted chemical and fingerprint analyses of the material released and the cistern water samples;
- Conducted a technical review of the HOVENSA analytical results to ensure that the samples were analyzed correctly and,
- Conducted daily inspections to make sure that cistern disconnections, rooftop cleanup, cistern reconnections and alternate water distribution were performed adequately for the response.

SAMPLE COLLECTION

All samples were collected in accordance with a statistical model that EPA often uses to investigate potential chemical contamination. EPA has a high level of confidence in the accuracy of this statistical sampling approach; and because a statistical model was used, not all cisterns needed to be sampled to determine impact.

A total of 45 samples were collected from the 186 cisterns located within the impacted neighborhoods. EPA collected 24 split samples of the 45 collected to ensure accuracy of the HOVENSA analyses. Thirty-six of the samples were collected from rooftops where coker residues were present; nine of the samples were randomly selected.